

2. STEWARDSHIP: TOWARD A FEDERAL BALANCE SHEET

Introduction

The Government's financial condition can be examined from several alternative perspectives, and a balanced assessment requires various approaches. This chapter presents an organizing framework for such analysis. The Government is not a business, and it cannot be evaluated simply by applying the usual business accounting techniques. A full evaluation of its finances must consider a broader range of information than is contained in a conventional balance sheet, and none of the tables in this chapter should be treated as if it were "*the* balance sheet" of the Federal Government. Considered as a whole, however, the chapter with all of its tables provides an overview of the Government's financial resources, the current and future claims on them, and some information about what the taxpayer is getting in exchange for this commitment of resources. In this way, the presentation that follows offers the kind of information that a financial analyst would expect to find in a business balance sheet.

Because of major differences between Government and business, and the serious limitations of the available data, this chapter's findings should be interpreted with considerable caution. The conclusions are tentative and subject to future revision as the estimating methods are improved and better data become available.

The presentation consists of three parts:

- The first part reports on what the Federal Government owns and what it owes. Table 2-1 summarizes this information. The assets and liabilities in this table are a useful starting point for a financial analysis of the Federal Government, but they are only a partial reflection of the full range of Government resources and responsibilities. The assets include only the items that are actually owned by the Government; through taxation the Government can rely on a much wider range of resources to meet future obligations. The liabilities in the table are binding Government commitments resulting from prior actions; the Government's financial responsibilities are considerably broader than this.
- The second part presents possible future paths for the Federal budget extending well into the next century, including an extension of the proposals in the 1998 Budget. The information is summarized in Table 2-2 and in the set of charts presented along with it. This is the appropriate context in which to examine the balance between

future Federal resources and responsibilities; and the analysis in this part offers the clearest indication of the long-run financial burdens that the Government faces and the resources that will be available to meet them. Some future claims on the Government receive special emphasis because of their importance to individuals' retirement plans. Table 2-3 summarizes the condition of the social security and Medicare trust funds and how that condition has changed since 1995.

- The third part of the presentation features information on broader economic and social conditions that are affected by Government activity. Table 2-4 is a summary of national wealth highlighting the different categories of Federal investment that have contributed to wealth. Table 2-5 is a sample of economic and social indicators. No single statistic, not even GDP, can capture the full ramifications of Federal actions; a comprehensive set of indicators, such as the one presented here, is needed to encompass the full range of Government activities and interests.

Relationship with FASAB Objectives

The framework presented here meets one of the four objectives¹ of Federal financial reporting recommended by the Federal Accounting Standards Advisory Board and adopted for use by the Federal Government in September 1993. This Stewardship Objective says:

Federal financial reporting should assist report users in assessing the impact on the country of the Government's operations and investments for the period and how, as a result, the Government's and the Nation's financial conditions have changed and may change in the future. Federal financial reporting should provide information that helps the reader to determine:

3a. Whether the Government's financial position improved or deteriorated over the period.

3b. Whether future budgetary resources will likely be sufficient to sustain public services and to meet obligations as they come due.

3c. Whether Government operations have contributed to the Nation's current and future well-being.

The experimental presentation here explores one possible approach for meeting this objective at the Government-wide level.

¹ *Objectives of Federal Financial Reporting*, Statement of Federal Financial Accounting Concepts Number 1, September 2, 1993. The other three Objectives relate to budgetary integrity, operating performance, and systems and controls.

QUESTIONS AND ANSWERS ABOUT THE GOVERNMENT'S "BALANCE SHEET"

1. According to Table 2-1, the Government's liabilities exceed its assets. No business could operate that way. Why can't the Government run like a business?

Because the Federal Government is not a business. It has fundamentally different objectives, and so must operate in different ways.

The primary goal of every business is to earn a profit. But in our free market system, the Federal Government leaves virtually all activities at which a profit could be earned to the private sector. In fact, the vast bulk of the Federal Government's operations are of a nature such that it would be difficult or impossible to charge prices at all—let alone prices that would cover expenses. The Government undertakes these activities not to improve its balance sheet, but for the balance sheet of the Nation—that is, its people and its businesses—including not only monetary but also nonmonetary values. No business would—or should—sacrifice its own balance sheet to bolster that of the rest of the country.

To illustrate, one of the Federal Government's most valuable assets is its holdings of gold. The price of gold generally fluctuates counter to the state of the economy—if inflation is rapid and out of control, the price of gold rises; but when inflation slows and steadies, the price of gold falls. One important source of the deterioration of the Federal Government's balance sheet since the 1980s has been the decline in the price of gold, which reduced the value of the Government's gold holdings. But that price decline—and hence a deterioration of the Government's balance sheet—was a direct consequence of Federal policies to reduce inflation, for the benefit of the people and businesses of the United States. No business would undertake such a policy of worsening its own balance sheet.

Similarly, the Federal Government invests in education and research. The Government earns no return from these investments; but the Nation and its people are made richer. A business, in contrast, undertakes investments that earn a profit for itself, not others.

Because the Federal Government's objectives are different, its balance sheet will behave differently.

2. But doesn't Table 2-1 say that the Government is insolvent?

No. Just as the Federal Government's responsibilities are of a different nature than those of a private business, so are its resources. Its solvency must be evaluated in different terms.

What the table shows is that those Federal obligations that are comparable to the liabilities that a business corporation would show on its balance sheet exceed the estimated value of the assets the Federal Government actually owns. However, the Government has access to other resources—such as through its sovereign powers of taxation and money creation. These powers give the Government the ability to meet its present obligations and those it will incur through future operations.

The financial markets clearly recognize this reality. The Federal Government's implicit credit rating is the best in the United States; lenders are willing to lend it money at interest rates substantially below those charged to private borrowers. This would not be true if the Government were really insolvent. In countries where governments totter on the brink of true insolvency, lenders are either unwilling to lend them money, or do so only in return for a substantial interest premium.

However, the Federal Government's balance sheet was clearly worsened by the budget policies of the 1980s. If the President's policy proposals in this budget are accepted, the excess of the Government's liabilities over its assets could well shrink over the foreseeable future.

QUESTIONS AND ANSWERS ABOUT THE GOVERNMENT'S "BALANCE SHEET"—Continued**3. *The Government does not comply with the accounting requirements imposed on private businesses. Why can't the government keep a proper set of books?***

Because the Government is not a business, and its primary goal is not to earn profits and to enhance its own wealth, accounting standards designed to illuminate how much a business earns and how much equity it has would be misleading, and would not provide the most useful information. The appreciation of the need for separate Federal Government accounting standards is comparatively recent. But now the Federal Accounting Standards Advisory Board has developed, and the Federal Government has adopted, an accounting framework that reflects the Government's functions and answers the questions about the responsibilities for which it should be accountable. This framework addresses the Government's budgetary integrity, operating performance, stewardship, and systems and controls. The Board has also developed, and the Government has adopted, a full set of accounting standards. Federal agencies are issuing audited financial reports that follow these standards; a Government-wide consolidated financial report following these standards will be issued for FY 1997.

This chapter viewed in its entirety addresses the "stewardship objective"—assessing the inter-related financial condition of the Federal Government and of the Nation for which the Government is responsible. The data in this chapter are intended to develop a fuller understanding of the trade-offs and connections between making the Federal Government "better off" and making the Nation "better off."

However, there is no single number or "bottom line" for the Government comparable to the net worth of a business corporation. Some analysts find this absence of a bottom line to be frustrating. But pretending that there is such a number—when there clearly is not—does not advance the understanding of Government finances.

4. *Why isn't social security shown as a liability in Table 2.1?*

Social security benefits are a political and moral responsibility of the Federal Government, but they are not a liability. The Government has unilaterally both increased and decreased benefits in the past; the Social Security Advisory Council has recently suggested further reforms, involving additional changes in benefits. When the amount in question can be changed in such a fashion, it would not ordinarily be considered a liability.

There are a large number of other Federal programs that are similar in many ways to social security, such as Medicare, veterans benefits, and student loans, to name only three. These programs are not counted as liabilities in the balance sheet. Treating social security benefits differently from these other programs would be hard to justify.

Furthermore, if social security benefits were to be treated as liabilities, then logic would suggest that the earmarked social security payroll tax receipts that finance those benefits should be assets. However, no other future tax receipts are counted as assets in the formal sense; and thus again, drawing a line between social security taxes and other taxes would appear questionable.

QUESTIONS AND ANSWERS ABOUT THE GOVERNMENT'S "BALANCE SHEET"—Continued**5. *It is all very well to balance the budget in 2002, but can this be a permanent solution? When the baby-boom generation retires beginning in 2008, won't the deficit return larger and meaner than ever before?***

The aging of the U.S. population, which will become dramatically evident when the baby-boomers retire, poses serious long-term problems for the Federal budget and its major entitlement programs. However, balancing the budget over the next few years would leave the country much better prepared to address these problems.

If the reforms in this budget are enacted, not only would the budget come into balance, but that balance would be preserved for some time to come (under an extension of the economic and technical assumptions used for this budget). Far from being an exercise in futility, balancing the budget now is one of the key steps towards keeping it in balance when the baby-boomers retire. The second part of this chapter and the charts that accompany it show how the budget is likely to fare under various possible alternative assumptions. Absent the budget policy proposals the deficit is likely to begin growing sharply early in the next century.

6. *Does Federal investment exceed the deficit? Would it be sensible to permit a deficit so long as it was no larger than the amount spent on Federal investments?*

Gross Federal investment in physical capital was \$103 billion in 1996. This was about equal to the Federal deficit in that year. However, this does not mean that a deficit of this amount was appropriate.

First of all, the Government consumes capital each year in the process of providing goods and services to the public. The rationale that investment can justify borrowing should apply only to net investment, after depreciation is subtracted, because only net investment augments the assets available to offset the higher liability. For the Federal Government, as discussed in Chapter 6 of this volume, net investment in physical capital owned by the Federal Government is estimated to be negative in 1998. Thus, more deficit reduction would be required by this proposed criterion than would be required to balance the present budget.

The Federal Government also funds substantial amounts of physical capital that it does not own, such as highways and research facilities, and it funds investment in intangible "capital" such as education and training, or the conduct of research and development. A private business would never borrow to spend on assets that would be owned by other people. However, such spending is a principal function of Government. Chapter 6 shows that by this definition net investment is estimated to be positive in 1998, but by only a small amount.

There is another hitch in the logic of borrowing to invest. Businesses expect investments to earn a profit from which they repay the financing costs. In contrast, the Federal Government does not generally expect to receive a direct payoff (in the form of higher tax receipts) from its investments. In this sense, Government investments are no different from other Government expenditures, and the fact that they provide services over a longer period is no justification for excluding them when calculating the deficit.

Finally, the Federal Government has responsibilities for supporting the overall financial and economic well-being of the Nation. In this broader context, it might want to manage its fiscal policy so as to augment private saving and investment by paying for its own investments from current revenues, instead of borrowing in the credit market and crowding out private investment. In other words, there are considerations other than the amount of Federal investment that should govern the appropriate level of the deficit.

What Can Be Learned from a Balance Sheet Approach

The budget is an essential tool for allocating resources within the Federal Government and between the public and private sectors, but the standard budget presentation, with its focus on annual outlays, receipts, and the deficit over a five- or six-year period does not provide all the information that would be needed for a full analysis of the Government's financial and investment decisions. In addition, information about Federal assets and liabilities can be helpful. Long-run budget projections that extend the usual forecast horizon are also important. Finally, it is important to examine the effects on society and the economy of Government policies in order to evaluate how well the Federal Government is performing. A business may ultimately be judged by the bottom line in its income statement or balance sheet, but for the National Government, the ultimate test is how its actions affect the entire country. The data needed to judge its performance go beyond a simple measure of the net assets of the Government alone; indeed, given the Federal Government's much broader responsibilities, looking at its net assets alone can be misleading (see the "Questions and Answers" in the accompanying box).

Consider, for example, Federal investments in education or infrastructure which generate returns that flow mainly to households, private businesses or other levels of government rather than back to the Federal Treasury. Considered in terms of the Federal Government's own "bottom line," these investments are a negative, but they make a real contribution to the Nation as a whole, the economy, and the people. A framework for evaluating Federal finances needs to take the return on such investments into account, even when the return accrues to someone other than the Federal Government.

A good place to start an evaluation of the Government's finances is with a measurement of its assets and liabilities, although this is only a starting point. Such a tabulation is presented below based on data from a variety of public and private sources. It has sometimes been suggested that the Federal Government's assets, if fully accounted for, would exceed its debts, and that a positive balance in such a calculation would mitigate the risks of large Government budget deficits. Table 2-1 clearly shows that this is not correct. The Federal Government's assets are substantially less than its debts mainly because of the steep increase in deficits that occurred in the 1980s.

But that is not the end of the story. The Federal Government has resources that go beyond the conventional assets that normally appear on a balance sheet. These include the Government's sovereign powers to tax, regulate commerce, and set monetary policy. These powers call for special treatment in evaluating the Government's financial position. The Government's sovereign powers give it access to resources that no private individual or business possesses, but these powers would not be considered assets in any normal sense of the word, nor would they be counted on a conven-

tional balance sheet. Yet they need to be considered in a comprehensive review of the Government's financial condition. The best way to do this is to make a long-run projection of the Federal budget. The budget provides a comprehensive measure of the Government's annual cash flows, and projecting it forward shows how the Government's powers are expected to generate cash flows in the future.

On the other side of the ledger are the Government's formal debt obligations, such as Treasury bills or notes, along with the present discounted value of its obligations to pay pension benefits to Federal retirees. Both types of obligations have obvious counterparts in the business world that would appear on a business balance sheet. Accrued obligations for government insurance policies and the estimated present value of future failed loan guarantees and deposit insurance claims should also be added to Government liabilities. These formal liabilities are only a subset of the Government's financial responsibilities. In addition, there are obligations which have no analogues in business accounting, and which would not be included on a conventional balance sheet.

For example, the Government has established a broad range of programs that dispense cash and other benefits to individual recipients. The Government is not constitutionally obligated to continue payments under these programs; the benefits can be modified or even ended at any time, subject to the decisions of the elected representatives in Congress. Last year's welfare reform legislation is only the most recent example of such a change. Allowing for such changes, however, it is likely that many of these programs will remain Federal obligations in some form for the foreseeable future. The present value of the benefits that will be paid out through these programs therefore, can be measured as a claim on future Government resources. Again, the best way to see how future responsibilities line up with future resources is to project the Federal budget forward far enough in time to capture the long-run effects of current and past decisions. Projections of this sort are presented below.

The budget, even when projected far into the future, does not show whether the public is receiving value for its tax dollars. That question requires performance measures for government programs supplemented by appropriate information about conditions in the U.S. economy and society. Some of these data are currently available but much more would need to be developed to obtain a full picture. Examples of what might be done are also shown below.

The presentation that follows consists of a series of tables and charts. No one of these is a "Government balance sheet," but all of them together can serve many of the functions of a balance sheet. The schematic diagram, Chart 2-1, shows how they fit together. The tables and charts should be viewed as an ensemble, the main elements of which can be grouped together in two broad categories—assets/resources and liabilities/responsibilities.

- Reading down the left-hand side of the diagram shows the range of Federal resources, including assets the Government owns, tax receipts it can expect to collect, and national wealth that underpins the Government's revenue raising capacity.
- Reading down the right-hand side reveals the full range of Federal obligations and responsibilities, beginning with Government's acknowledged liabilities based on past actions, such as the debt held by the public, and going on to include future budget outlays.

Chart 2-1. A BALANCE SHEET PRESENTATION FOR THE FEDERAL GOVERNMENT

ASSETS/RESOURCES		LIABILITIES/RESPONSIBILITIES	
Federal Assets Financial Assets Gold and Foreign Exchange Other Monetary Assets Mortgages and Other Loans Less Expected Loan Losses Other Financial Assets Physical Assets Fixed Reproducible Capital Defense Nondefense Inventories Non-reproducible Capital Land Mineral Rights	Federal Governmental Assets and Liabilities (Table 2-1)	Federal Liabilities Financial Liabilities Currency and Bank Reserves Debt Held by the Public Miscellaneous Guarantees and Insurance Deposit Insurance Pension Benefit Guarantees Loan Guarantees Other Insurance Federal Pension Liabilities Net Balance	
Resources/Receipts Projected Receipts Addendum: Real GDP Projections	Long-Run Federal Budget Projections (Table 2-2)	Responsibilities/Outlays Discretionary Outlays Mandatory Outlays Social Security Health Programs Other Programs Net Interest Deficit	
	Change in Trust Fund Balances (Table 2-3)		
National Assets/Resources Federally Owned Physical Assets State & Local Physical Assets Federal Contribution Privately Owned Physical Assets Education Capital Federal Contribution R&D Capital Federal Contribution	National Wealth (Table 2-4)	National Needs/Conditions Indicators of economic, social, educational, and environmental conditions to be used as a guide to Government investment and management.	
	Social Indicators (Table 2-5)		

PART I—THE FEDERAL GOVERNMENT'S ASSETS AND LIABILITIES

Table 2-1 summarizes what the Government owes as a result of its past operations along with the value of what it owns, for a number of years beginning in 1960. The values of assets and liabilities are measured in terms of constant FY 1996 dollars. For nearly all of this period, Government liabilities have exceeded the value of assets, but until the early 1980s the disparity was relatively small, and it was only growing slowly (see Chart 2-2).

In the late 1970s, a speculative run-up in the prices of oil, gold, and other real assets temporarily boosted Federal asset values, but since then they have declined. This temporary improvement highlights the importance of the other tables in this presentation. What is good for the Federal Government as an asset holder is not necessarily favorable to the economy. The decline in

inflation in the early 1980s reversed the speculative runup in gold and other commodity prices. That reduced the balance of Federal net assets, but it was good for the economy.

The total real value of Federal assets is estimated to be about 18 percent greater than it was in 1960. Meanwhile, Federal liabilities have increased by almost 180 percent in real terms. The sharp decline in the Federal net asset position in the 1980s was principally due to large Federal budget deficits along with a drop in asset values. Currently, the net excess of liabilities over assets is about \$3 trillion or \$12,000 per capita.

Assets:

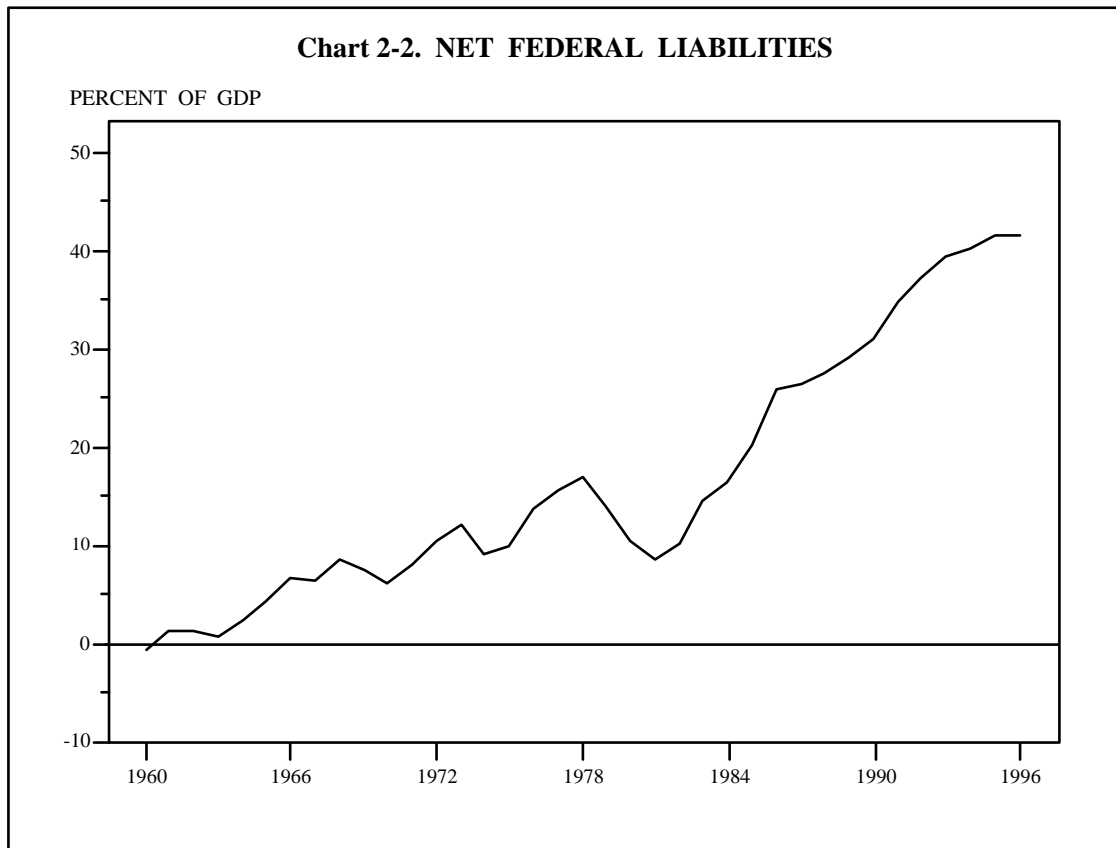
The assets in Table 2-1 reflect the most comprehensive possible list of the financial and physical resources

Table 2-1 GOVERNMENT ASSETS AND LIABILITIES *

(As of the end of the fiscal year, in billions of 1996 dollars)

	1960	1965	1970	1975	1980	1985	1990	1994	1995	1996
ASSETS										
Financial Assets:										
Gold and Foreign Exchange	100	71	59	133	328	157	198	174	181	165
Other Monetary Assets	77	112	68	43	82	52	68	69	70	87
Mortgages and Other Loans	124	159	206	206	284	348	282	224	196	171
less Expected Loan Losses.	-1	-3	-4	-9	-16	-16	-18	-26	-22	-22
Other Financial Assets	59	79	65	66	86	110	170	195	195	200
Subtotal	360	419	393	439	763	651	700	635	619	600
Physical Assets:										
Fixed Reproducible Capital:										
Defense	843	841	845	655	541	674	768	786	761	739
Nondefense	149	174	189	196	210	226	244	252	258	261
Inventories	257	222	207	184	225	257	224	174	172	168
Nonreproducible Capital:										
Land	89	123	153	238	302	325	321	242	240	239
Mineral Rights	321	297	245	340	618	696	465	367	342	376
Subtotal	1,659	1,658	1,639	1,613	1,896	2,178	2,022	1,820	1,773	1,783
Total assets	2,018	2,077	2,032	2,052	2,659	2,829	2,722	2,455	2,392	2,383
LIABILITIES										
Financial Liabilities:										
Currency and Bank Reserves	224	246	272	277	279	295	352	430	437	446
Debt held by the Public	973	961	815	802	1,039	1,845	2,532	3,219	3,302	3,347
Miscellaneous	25	27	28	41	59	84	126	112	117	120
Subtotal	1,222	1,234	1,115	1,120	1,377	2,224	3,010	3,761	3,856	3,913
Insurance Liabilities:										
Deposit Insurance					2	9	68	8	5	2
Pension Benefit Guarantee Corp.				42	30	42	41	31	19	13
Loan Guarantees			2	6	12	10	15	31	28	31
Other Insurance	30	27	22	20	26	16	19	17	16	16
Subtotal	30	28	24	68	71	77	142	88	68	62
Federal Pension Liabilities	749	949	1,125	1,280	1,740	1,726	1,656	1,570	1,581	1,598
Total liabilities	2,001	2,211	2,264	2,468	3,187	4,028	4,809	5,420	5,505	5,572
Balance	17	-134	-232	-416	-528	-1,199	-2,086	-2,965	-3,113	-3,189
Per Capita (in 1996 dollars)	95	-689	-1,130	-1,926	-2,313	-5,013	-8,324	-11,344	-11,805	-11,985
Ratio to GDP (in percent)	0.7	-4.2	-6.2	-9.8	-10.4	-20.2	-30.9	-40.2	-41.6	-41.6

* This table shows assets and liabilities for the Government as a whole, including the Federal Reserve System. Therefore, it does not break out separately the assets held in Government accounts, such as social security, that are the obligation of other Government agencies. Estimates for FY 1995 are extrapolated in some cases. Negative numbers are in parentheses.



owned by the Federal Government. The list corresponds to items that would appear on a typical balance sheet, but it does not constitute an exhaustive catalogue of Federal resources. In particular, the Government's most important financial resource, its ability to tax, is not reflected.

Financial Assets: According to the Federal Reserve Board's Flow-of-Funds accounts, the Federal Government's holdings of financial assets amounted to about \$600 billion at the end of 1996. Government-held mortgages and other loans (measured in constant dollars) reached a peak in the mid-1980s. Since then, Federal loans have declined. The holdings of mortgages, in particular, have declined sharply over the last five years as the holdings acquired from failed Savings and Loan institutions have been liquidated.

The face value of mortgages and other loans overstates their economic worth. OMB estimates that the discounted present value of future losses and interest subsidy on these loans is about \$22 billion as of 1996. These estimated losses are subtracted from the face value of outstanding loans to obtain a better estimate of their economic worth.

Over time, variations in the price of gold have accounted for major swings in this category. Since the end of Fiscal Year 1980, gold prices have fallen and the real value of U.S. gold and foreign exchange hold-

ings has dropped by about 50 percent. Much of this decline occurred before 1990; since then the decline has continued but at a slower pace.

Reproducible Capital: The Federal Government is a major investor in physical capital. Government-owned stocks of fixed capital amounted to \$1.0 trillion in 1996 (OMB estimate). About three-quarters of this capital took the form of defense equipment or structures.

Non-reproducible Capital: The Government owns significant amounts of land and mineral deposits. There are no official estimates of the market value of these holdings. Researchers in the private sector have estimated what they are worth, and these estimates are extrapolated in Table 2-1. Private land values are about 20 percent lower than they were at the end of the 1980s, although they have risen somewhat since 1993. It is assumed here that federal land has shared in this decline. Oil prices have fluctuated but are lower now than they were five years ago. The past year's increase in oil prices, however, has pulled up the value of Federal mineral deposits.

Total Assets: The total real value of Government assets is lower now than at the end of the 1980s, principally because of declines in the real prices of gold, land, and minerals. Even so, the Government's holdings are vast. At the end of 1996, the value of Government assets is estimated to have been about \$2.4 trillion.

Liabilities:

Only liabilities analogous to those of a business corporation are shown in Table 2-1. These include the various forms of Federal debt, Federal pension obligations to its workers, and an imputed liability for Federal insurance and loan guarantee programs. Other potential claims on Federal financial resources are not reflected.

Financial Liabilities: The Government's financial liabilities amounted to about \$3.9 trillion at the end of 1996. The largest component was Federal debt held by the public, amounting to over \$3.3 trillion. This measure of Federal debt is net of the holdings of the Federal Reserve System, about \$390 billion in 1996. (Although independent in its policy deliberations, the Federal Reserve is part of the Federal Government, and its assets and liabilities are included here in the Federal totals.) In addition to debt held by the public, the Government's financial liabilities include approximately \$450 billion in currency and bank reserves, which are mainly obligations of the Federal Reserve System, and about \$120 billion in miscellaneous liabilities.

Guarantees and Insurance Liabilities: The Federal Government has contingent liabilities arising from loan guarantee and insurance programs. When the Government guarantees a loan or offers insurance, initial cash flows may be small or, if a fee is charged, they may even be negative, but the risk of future outlays associated with such commitments can be much larger. In the past, the accruing cost of such risks was not recognized until after a loss was realized. Table 2-1 includes

an estimate of the discounted present value of future costs traceable to risks assumed through the end of last year.

Federal Pension Liabilities: The Federal Government owes pension benefits to its retired workers and to current employees who will eventually retire. The amount of these liabilities is large. As of 1996, the discounted present value of the benefits is estimated to have been around \$1.6 trillion.²

The Balance of Net Liabilities

Because its sovereign powers give it access to other resources, the Government need not maintain a positive balance of net assets, and the rapid buildup in liabilities since 1980 has not damaged the Federal creditworthiness. However, from 1980 to 1992, the balance between Federal liabilities and Federal assets did deteriorate at a rapid rate. In 1980, the negative balance was 10 percent of GDP. By 1992 it was 37 percent of GDP. Since then it has increased only half as fast. However, because the net liability did deteriorate, albeit slowly, it has reached about 42 percent of GDP.

The Government is able to finance its borrowing, and often does so at quite moderate interest rates, but ever continuing increases in the scale of its net liabilities would be worrisome. Fortunately, the upward trend is being reversed. Since 1992, the budget deficit has declined by about two thirds, and the rate of increase in Federal debt has slowed appreciably. If the budget were balanced, as the Administration proposes, the rate of decline in the net asset position would be reversed, and even before the budget reached surplus, the ratio of net liabilities to GDP would begin to decline.

PART II—THE BALANCE OF RESOURCES AND RESPONSIBILITIES

The data summarized in Table 2-1 are useful in showing the consequences of past Government policies. But Government's continuing commitments to provide public services are not reflected there, nor can the Government's broader resources be displayed in a table that is limited to the assets that it owns. A better way to examine the balance between future Government obligations and resources is by projecting the overall budget. The budget offers the most comprehensive measure of the Government's financial burdens and its resources. By projecting total receipts and outlays, it is possible to examine whether there will be sufficient resources to support all of the Government's ongoing responsibilities.

This part of the presentation shows some alternative long-run projections of the Federal budget that extend into the middle of the next century. Forecasting the economy and the budget over such a long period is highly uncertain. Future budget outcomes depend on a host of unknowns—constantly changing economic conditions, unforeseen international developments, unexpected demographic shifts, the unpredictable forces of

technological advance, and unknown future political preferences. Those uncertainties increase the further ahead projections are pushed. Even so, long-run budget projections are needed to assess the full implications of current policy choices, and to sound warnings about future problems that could be avoided by timely action.

The Federal Government's responsibilities extend well beyond the five- or six-year window that has been the focus of recent budget analysis and debate. There is no time limit on Government's constitutional responsibilities, and programs like social security are clearly expected to continue indefinitely.

It is evident even now that there will be mounting challenges to the budget after the turn of the century. The huge baby-boom generation born in the years after World War II is aging and will begin to retire around the year 2005. By 2008, the first baby-boomers will become eligible for social security. In the years that follow there will be serious strains on the budget because of increased expenditures for both social security and Medicare. Long-range projections can help indicate

² These pension liabilities are expressed as the actuarial present value of benefits accrued to-date based on past and projected salaries. The cost of retiree health benefits is not

included because estimates are unavailable. The 1996 liability is extrapolated from recent trends.

how serious these strains might become and what is needed to withstand them.

The retirement of the baby-boomers dictates the timing of the problem, but the underlying cause is deeper. The growth of the U.S. population has been slowing down, and because of that, and because people are living longer, a change is coming in the ratio of retirees to workers. That change will speed up dramatically when the baby-boomers begin to retire, but even after they have passed from the scene later in the century, the higher ratio of dependent elderly will persist. There is in short a long-run problem facing the Nation's retirement programs that will continue as long as Americans continue to live longer in retirement and have fewer offspring. The same problem is gripping other developed nations, even those that never experienced a baby boom—and, in fact, for some of those nations the problem has already arrived.

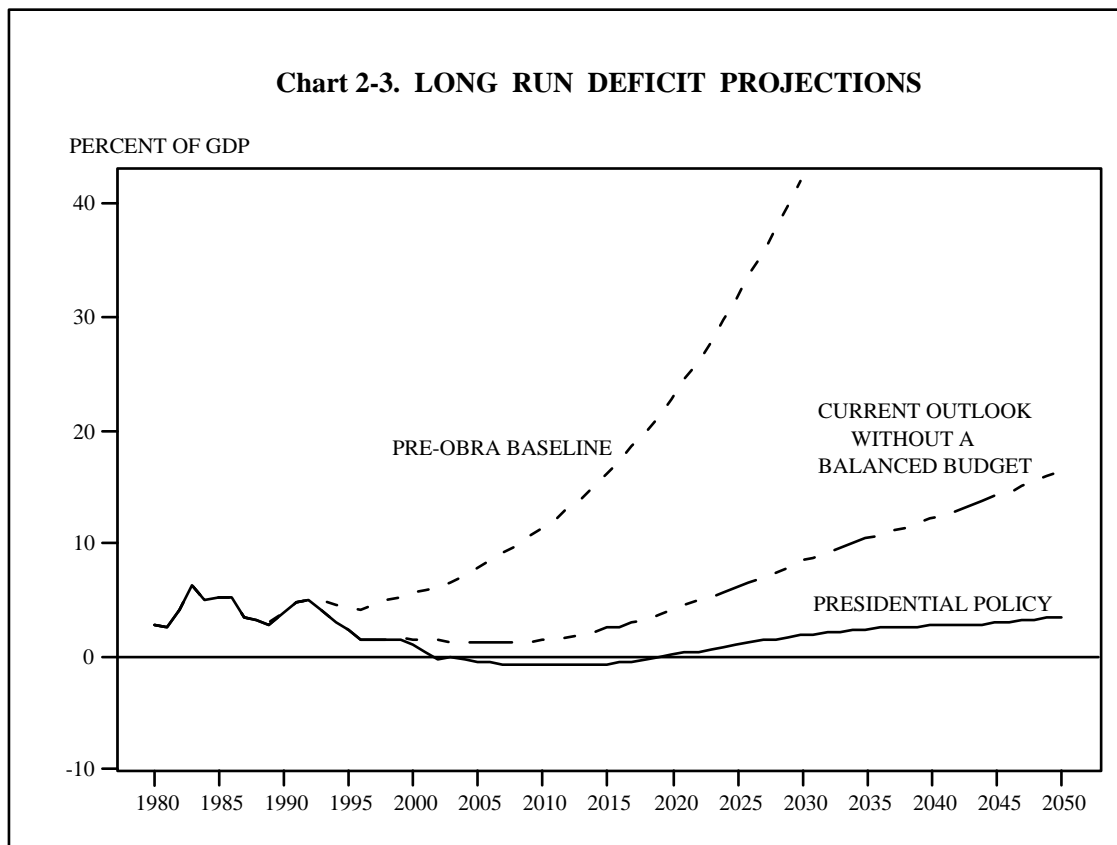
The Long-Range Outlook for the Budget.—Since this Administration first took office there have been major changes in the long-run budget outlook. In January 1993, the deficit was clearly on an unsustainable trajectory. Had the policies then in place continued unchanged, the deficit would have steadily mounted, not only in dollar terms, but relative to the size of the economy.³ The Omnibus Budget Reconciliation Act of

1993 (OBRA 1993) changed that. Not only did it reduce the near-term deficit, but it also brought down the long-term budget deficit. Subsequent budget action pulled down the deficit even more. It is now expected that current budget policies would be sufficient to maintain the deficit as a relatively stable share of GDP for many years to come (see Chart 2-3).

Despite this improvement, however, the long-run outlook for the budget remains problematic. Without further action, substantial increases in Federal debt and the deficit are likely when the baby-boom generation retires. For example, the 1994 report of the Bipartisan Commission on Entitlement and Tax Reform found that there is a “long-term imbalance between the government's entitlement promises and the funds it will have available to pay for them.” Last year, the Congressional Budget Office in *The Economic and Budget Outlook: Fiscal Years 1997-2006* observed in reference to the budgetary threat posed by the retirement of the baby-boomers, “Those fiscal demands could produce unsustainably high levels of federal debt unless additional actions are taken to control federal spending.” On a narrower front, the annual Trustees' reports for both the social security and Medicare trust funds have for some time projected a long-run actuarial deficiency for these programs.

³Over long periods when the rate of inflation is positive, comparisons of dollar values are meaningless. Even the low rate of inflation assumed in this budget will reduce the

value of a 1996 dollar by 60 percent by 2030, and by more than 75 percent by the year 2050. For long-run comparisons, it is much more useful to examine the ratio of the deficit and other budget categories to the overall size of the economy as measured by GDP.



Economic and Demographic Projections.—Long-run budget projections must be based on a long-run demographic and economic forecast, even though such forecasts are highly uncertain and sure to be at least partly wrong. Otherwise, it is impossible to form any judgment about future resources or the potential claims on them. The forecast used here extends the Administration's medium-term economic projections described in the first chapter of this volume augmented by the long-run demographic projections from the most recent social security Trustees' Report.

- Inflation, unemployment and interest rates are assumed to hold stable at their values in the last year of the Administration projections, 2007.
- Productivity growth is assumed to continue at a constant rate equal to its average rate in the Administration's projections, approximately 1.1 percent per year.
- In line with the most recent projections of the social security Trustees, population growth is expected to slow over the next several decades. This is consistent with recent trends in the birth rate and an expected decline in the proportion of women in their childbearing years. The slowdown is expected to lower the rate of population growth from about 1 percent per year to half that rate by the year 2030.
- Labor force participation is also expected to decline as the population ages and the proportion of retirees in the population increases. Over the next decade, however, the Administration is projecting a higher rate of labor force participation than in the latest Trustees' Report. That difference is preserved in the long-run projections below.
- The real rate of economic growth is determined by the expected growth of the labor force (assuming a stable unemployment rate) plus labor productivity growth. Because labor force growth is expected to slow, even though productivity growth is assumed to be constant, real GDP growth declines during the period after 2007 from around 2¼ percent to less than 1½ percent per year.

The assumptions just described are consistent with the Administration's policy of balancing the budget. For the long-run projections without a balanced budget, the assumptions are revised slightly to reflect higher interest rates and other changes that would occur if the President's proposals were not adopted. Aside from this revision for the baseline projections, the economic projections are set by assumption and do not automatically change in response to changes in the budget outlook. This is unrealistic, but it simplifies comparisons of alternative policies. It also tends to underestimate the budgetary effects of policies that fail to stabilize the deficit and the Federal debt. Such policies are likely to lower saving, raise interest rates, and reduce economic growth, creating a feedback effect that drives the budget deficit higher and raises the level of debt further. Thus, a more responsive (or dynamic) set of

assumptions would serve mainly to strengthen the conclusions based on the current approach.

The Deficit Outlook.—Chart 2-3 shows three alternative deficit projections: a projection based on the policies in place prior to enactment of OBRA 1993; the current baseline projections which incorporate the effects of OBRA 1993 along with subsequent changes in budget policy; and a projection that shows what would happen to the long-run deficit if the proposals in the current budget were adopted. The chart clearly illustrates the dramatic improvement in the deficit that has already been achieved. Despite the improvement in the outlook, serious long-run problems remain to be addressed. Without further changes, the deficit is expected to begin rising again relative to the size of the economy. If unchecked, the growth in the deficit would eventually push the debt to unsustainable levels. However, if the budget were balanced early in the next century, as the President proposes, the task of maintaining fiscal stability when the demographic bulge hits could be substantially reduced.

Table 2-2 shows long-range projections for the major categories of spending under current baseline assumptions and with the policy changes proposed in this year's budget. The table shows that the entitlement programs are the major driving force behind the rise in the deficit in the long run. Social security benefits, driven by the retirement of the baby-boom generation, rise from 4.6 percent of GDP in 2000 to 6.4 percent in 2030. The rise in Federal health care is even greater. Together Medicare and Medicaid reach 4.1 percent of GDP in 2000 along the current baseline, and then continue to rise to over 10 percent by the year 2030.

As this occurs, the deficit begins to soar. Initially, the programmatic spending drives the increase, but then a vicious spiral takes hold in which more borrowing leads to higher Federal interest payments on the growing debt which are financed in turn by yet more borrowing. The spiral is unstable in that if it continued unchecked it would lead to an unbounded increase in the debt and the deficit. At some point, a financial crisis would surely be triggered that would force some type of action on the Federal Government, action that was certain to be drastic and painful.

Because interest on the debt is the uncontrollable consequence of past spending decisions, it is useful to focus on the primary surplus or deficit, which is the balance between revenues and non-interest outlays. This measure is shown in Table 2-2 along with the total, or unified surplus or deficit. The large and rapidly growing deficit in the unified budget is the product of a smaller and slower growing primary deficit. If the imbalance in the primary budget could be controlled over time, the larger imbalance in the unified budget would automatically be resolved. The unsustainable spiral of increasing deficits and debt can be avoided by maintaining a small primary surplus. This is possible even with a modest deficit in the unified budget. How-

Table 2-2. ALTERNATIVE BUDGET PROJECTIONS
(Percent of GDP)

	1995	2000	2005	2010	2020	2030	2040	2050
Current outlook without a balanced budget:								
Receipts	18.9	19.0	18.9	18.9	19.0	19.2	19.4	19.5
Outlays	21.1	20.7	20.2	20.3	23.1	27.6	31.5	35.9
Discretionary	7.6	6.5	5.9	5.4	4.7	4.2	3.7	3.3
Mandatory	10.3	11.3	11.8	12.6	15.7	18.6	19.9	20.7
Social security	4.6	4.6	4.6	4.7	5.6	6.4	6.5	6.5
Medicare and Medicaid	3.4	4.1	4.8	5.7	8.1	10.5	11.9	12.8
Net interest	3.2	2.9	2.5	2.3	2.8	4.8	8.0	12.0
Surplus or deficit (-)	-2.3	-1.6	-1.2	-1.4	-4.1	-8.4	-12.2	-16.5
Primary surplus or deficit (-)	0.9	1.2	1.2	0.9	-1.3	-3.6	-4.2	-4.5
Federal debt held by the public	50.1	48.3	44.9	42.2	52.7	91.9	152.1	227.4
Presidential policy (balanced budget):								
Receipts	18.9	19.1	19.0	18.9	19.0	19.2	19.3	19.4
Outlays	21.1	20.1	18.6	18.1	19.1	21.1	22.1	22.9
Discretionary	7.6	6.2	5.4	4.8	4.2	3.7	3.3	2.9
Mandatory	10.3	11.1	11.3	11.8	14.1	16.3	17.1	17.5
Social security	4.6	4.6	4.6	4.7	5.6	6.4	6.5	6.5
Medicare and Medicaid	3.4	3.8	4.3	4.9	6.6	8.2	9.1	9.6
Net interest	3.2	2.7	2.0	1.4	0.8	1.0	1.7	2.5
Surplus or deficit (-)	-2.3	-1.0	0.4	0.8	-0.1	-1.9	-2.8	-3.5
Primary surplus or deficit (-)	0.9	1.8	2.3	2.2	0.7	-0.9	-1.1	-1.0
Federal debt held by the public	50.1	47.2	37.7	27.5	15.8	21.4	36.0	51.3

ever, the spiral is inevitable with a permanent primary deficit, even a small one.⁴

The long-run deficit outlook would be much improved if current budget proposals were enacted. Eliminating the deficit by 2002 would leave the budget in surplus for nearly two decades thereafter. While deficits would eventually reappear, they would be substantially lower than if the budget were not balanced now. In this sense, the current policy proposals would do much to place the budget on a sounder footing to address the coming fiscal pressures created by the retirement of the baby-boom generation.

The key to these projections is the set of economic assumptions which has already been discussed plus technical assumptions about Medicare, Medicaid and discretionary spending.

- The Medicare savings proposed in the budget are assumed to lower Medicare spending permanently relative to the current baseline. After 2007, the policy projections assume that Medicare resumes the same rate of growth as in the baseline projections, but starting from a much lower level that reflects the impact of the Administration's proposed savings. The baseline rate of growth after 2007 is taken from the latest reports of the Medicare Trustees, who assume a marked slowdown in growth in the long term.
- The projections assume that the Administration's proposed cap for per capita Medicaid payments is maintained indefinitely. Medicaid would continue to be an entitlement, and enrollment in the program would be determined by general eligi-

bility requirements, but increases in the Federal payments on a per person basis would be capped by a formula.

- By convention, the current services estimates of discretionary spending are assumed to rise with the rate of inflation. This assumption, or any other used for discretionary spending, is inherently arbitrary, because discretionary spending is determined annually through the legislative process, and there is no legally binding formula to dictate the pattern of future spending. The assumption that the real value of Federal services is unchanging⁵ implies over long periods of time that the size of the Federal establishment shrinks relative to the size of the economy.

Other assumptions are possible, and one reason why other analysts have come to varying conclusions is because of differences with one or more of these assumptions. For example, some assume that discretionary spending will hold to a constant share of GDP in the long run, even though that is not the current services assumption used by OMB and CBO. Under this alternative assumption, discretionary spending would seem neutral with respect to spending as a share of GDP. In contrast, when discretionary spending is held constant in real terms, as normally assumed by OMB, discretionary spending shrinks as a share of GDP, and consequently serves to offset some of the rise in entitlement spending as a share of GDP that occurs for demographic reasons.

⁴The exact relationship between fiscal sustainability and the primary surplus or deficit depends on the relationship among the initial ratio of debt to GDP, interest rates, and GDP growth. The higher the initial debt ratio or interest rates, or the lower GDP growth, the larger the primary surplus necessary to avoid the unsustainable debt spiral.

⁵This is an approximation. The real value of the services in terms of purchasing power would be unchanged, but the quantity of services would depend on the productivity of Federal workers. A significant portion of discretionary spending consists of Federal payroll costs. In a period of moderately rising real wages, as assumed in the budget and in the Trustees' report, these costs would rise somewhat faster than inflation on a per employee basis. Under these circumstances, holding Federal discretionary spending constant over several decades would imply a significant decrease in the Federal work force and, unless offset by productivity gains, in the volume of Federal services.

The Medicaid cap is also a key assumption. Limiting Federal Medicaid spending as a share of GDP would reduce the pressure on the budget by several percentage points of GDP, compared with a long-run projection in which Medicaid continues at its historical rate of growth.

Various alternative economic and technical assumptions are discussed below:

Alternative Scenarios.—Each alternative focuses on one of the key uncertainties in the outlook. Generally, the scenarios highlight negative possibilities rather than positive ones to show where the dangers are in the outlook.

1. *Discretionary Spending:* The projections assume that discretionary spending is held constant in real terms once budget balance is reached. With real economic growth and rising population, the public demand for Government services—more national parks, better transportation, additional Federal support for scientific research—might increase as well. The assumption also implies that the Nation's defense needs will not vary from the levels projected at the turn of the century. Alternative assumptions that allow for these programs to grow with population or overall economic activity are shown in Chart 2-4. These alternative assumptions worsen the deficit outlook.

2. *Health Spending:* Expenditures for Medicare and Medicaid have grown much faster than other entitlements, and even after the reforms in the President's

budget, they continue to rise at a rapid rate. The alternative assumptions show what would happen if spending for these programs speeds up or slows down after the budget is balanced. The budget is extremely sensitive to these assumptions, as can be seen in Chart 2-5.

3. *Productivity:* The slowdown in productivity growth in the U.S. economy that began in 1973 is responsible for the slow rise in U.S. real incomes since that time. Productivity can be altered by changes in the budget deficit which affect national saving, but many other factors influence it as well. The alternative scenarios illustrate what would happen to the budget deficit if productivity growth were higher or lower. A higher rate of growth would make the task of preserving a balanced budget dramatically easier; a lower growth rate would have the opposite effect. Chart 2-6 shows how the deficit varies with changes of one-half percentage point of average productivity growth.

4. *Population:* Much of the long-run problem is due to expected demographic shifts. Chart 2-6 illustrates how important these are by showing what happens to the deficit under the alternative demographic assumptions used by the social security Trustees in their most recent report. The projection of Presidential policy relies on the Trustees' intermediate assumptions.

Conclusion.—OBRA 1993 and subsequent policy actions have improved the long-run deficit outlook, but the deficit is still projected to increase if further budget

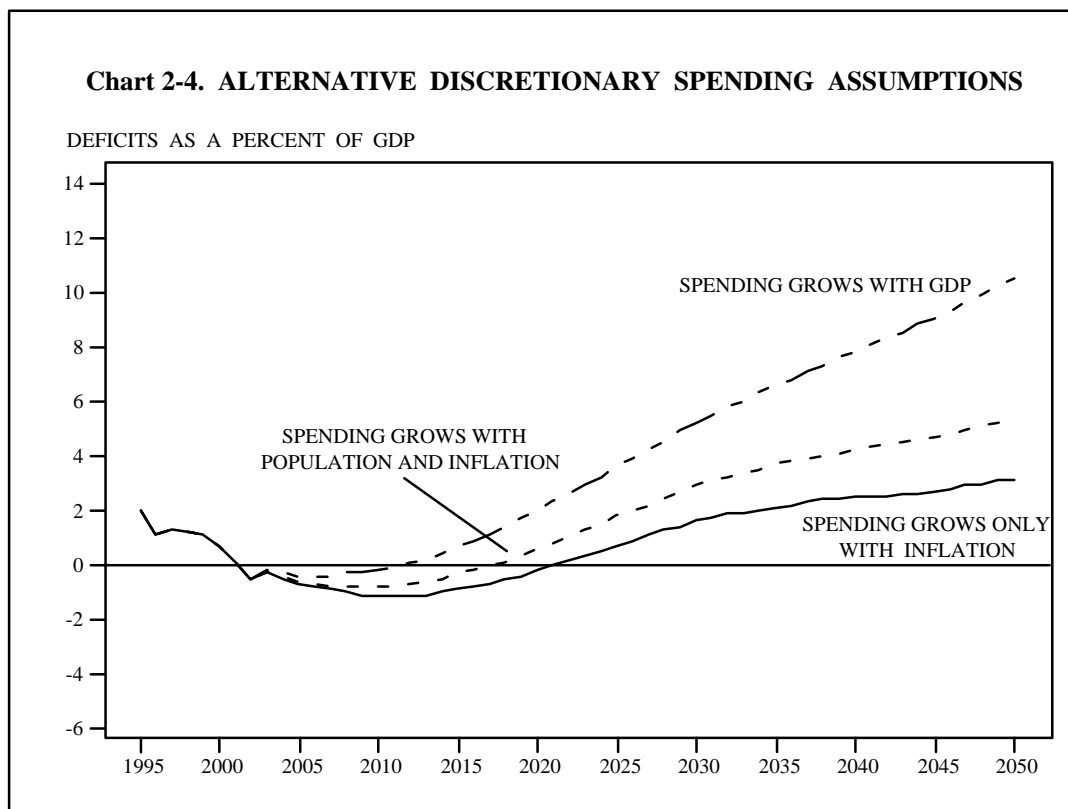
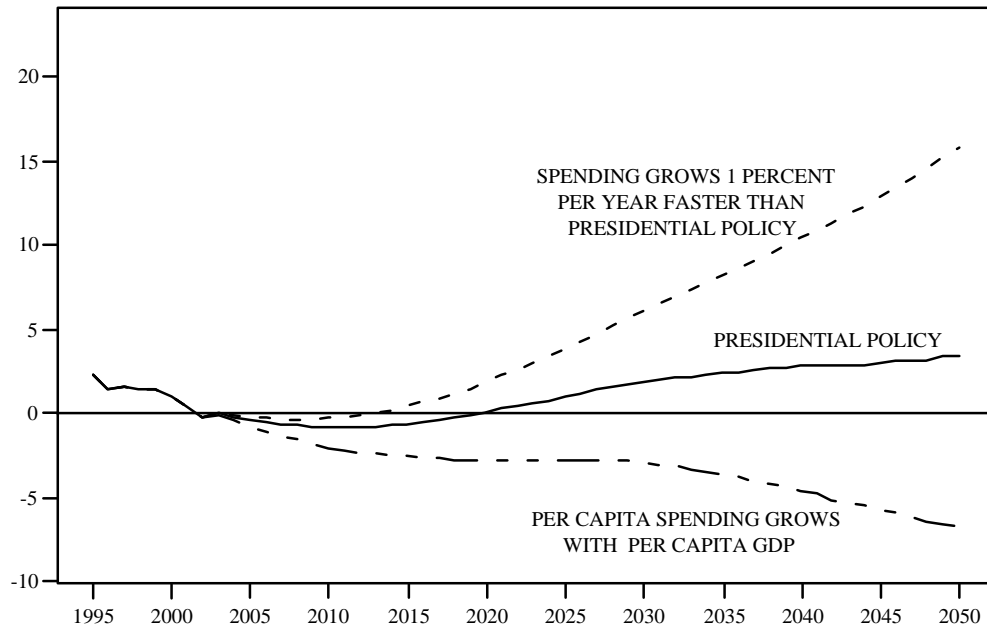
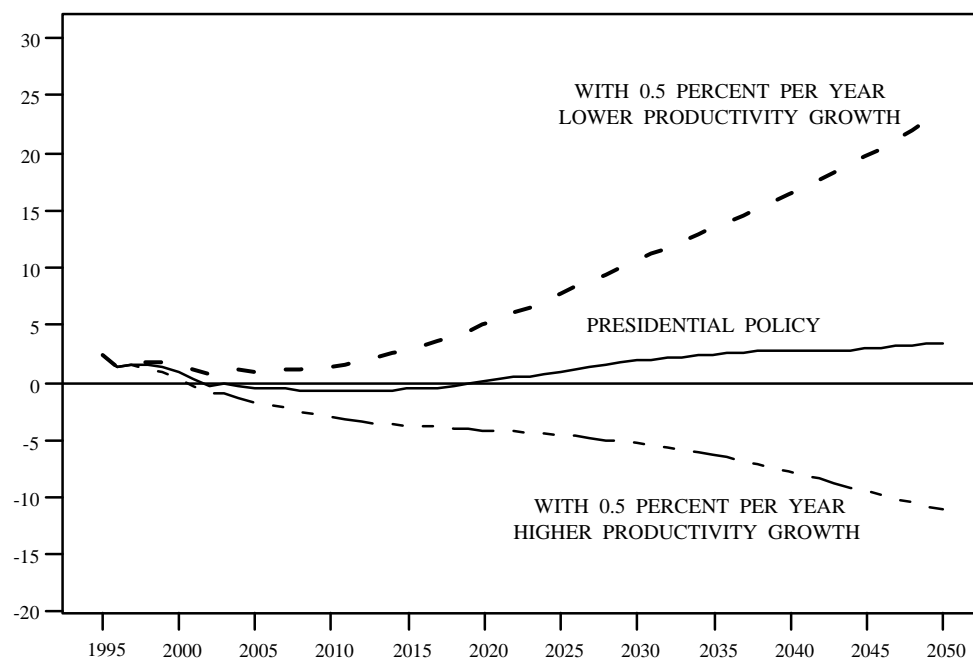


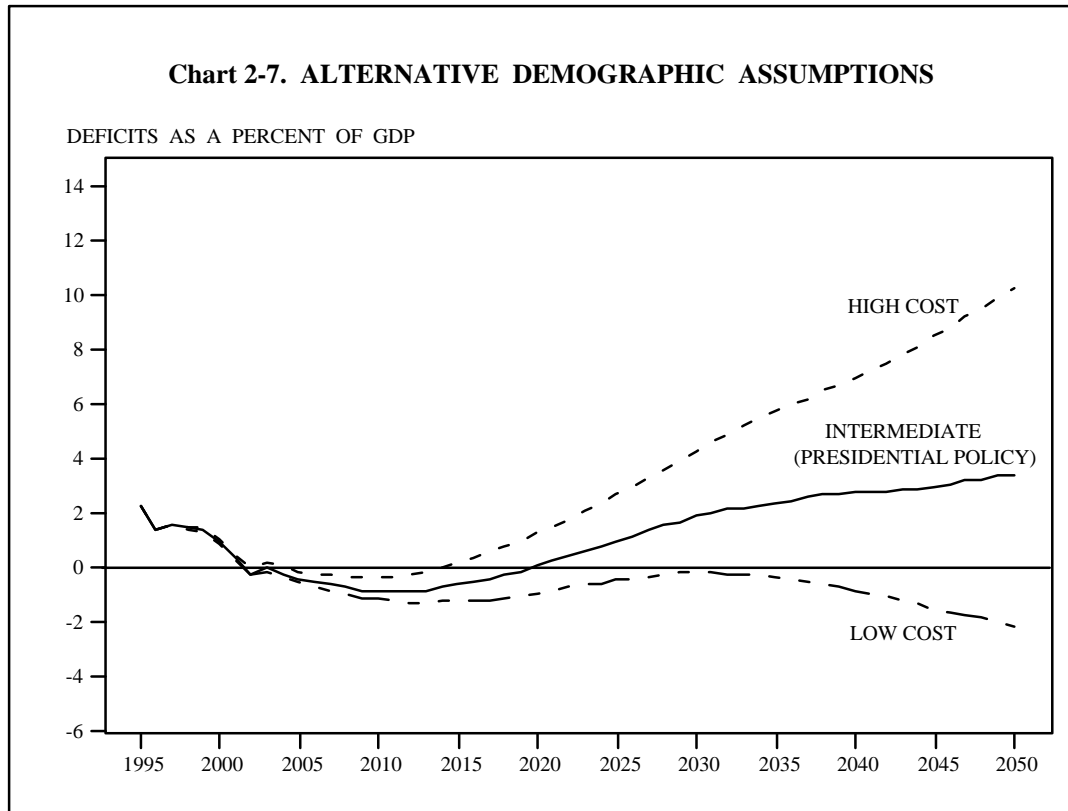
Chart 2-5. ALTERNATIVE HEALTH SPENDING ASSUMPTIONS

DEFICITS AS A PERCENT OF GDP

**Chart 2-6. ALTERNATIVE PRODUCTIVITY ASSUMPTIONS**

DEFICITS AS A PERCENT OF GDP





offsets are not made. The President's budget proposals would not only balance the budget by 2002, but go some distance toward resolving the long-run deficit problem as well.

Actuarial Balance in the Social Security and Medicare Trust Funds.—The Trustees for the social security and Hospital Insurance trust funds issue annual reports that include projections of income and outgo for these funds over a 75-year period. These projections are based on different methods and assumptions than the budget projections presented above, but they deliver a similar message: the retirement of the baby boom generation, coupled with high rates of health care cost growth, are expected to place large pressures on social security and Medicare, resulting in spending increases that outstrip the resources of the trust funds under current law.

The Trustees' reports highlight the 75-year actuarial balance of the trust funds as a summary measure of their financial status. This indicator measures the change in payroll taxes or program benefits, expressed as a percent of taxable payroll, that would be needed to leave the fund with a small positive balance at the end of 75 years.

Table 2-3 shows the changes in the 75-year actuarial balances of the social security and Hospital Insurance trust funds since 1995. There was only a small change in the consolidated balance for the combined OASDI fund, which aggregates the separate funds set up for

retirement and disability insurance. There was a noticeable deterioration in the Hospital Insurance fund for the Medicare program. In 1996, the Trustees for the Hospital Insurance Trust Fund projected that under their intermediate assumptions, the HI Trust Fund would be insolvent in 2002, one year earlier than projected in 1995. The Trustees are expected to revise the projected exhaustion date for HI later this spring in their 1997 Report. A significant change in the insolvency date is not expected. However, because the Trustees' analysis considers a wide range of uncertain developments, including additional experience in the current fiscal year, new analyses of factors affecting HI benefit growth during fiscal years 1991-1996, updated projections of HI payroll tax income, and possible revisions to interest rate expectations, it is not possible to predict the new exhaustion date prior to the Report's completion exactly. Furthermore, the Trustees' estimates do not take account of the legislative changes in Medicare proposed in this budget that would postpone the date at which the trust fund is expected to be depleted. While the HI fund is projected to be depleted within a few years in the intermediate actuarial projections, the combined OASDI fund would not be depleted for more than three decades.

The 75-year actuarial balance is widely reported, but it does not provide information about trends within the 75-year period. The social security trust fund, for example, is currently running large annual surpluses. Until 2012, the Trustees project that the current payroll tax

will be sufficient to cover program benefits. Afterwards, the program must draw down trust fund assets to finance benefits, until the fund is exhausted in 2029. If the payroll tax were raised today by the 2.2 percentage points necessary to eliminate the 75-year imbalance, the higher trust fund income would only cover outlays in the program until 2021, according to the

Trustees' intermediate projections. Beyond that point, trust fund assets would once again have to be drawn down to finance benefits. At the end of 75 years, the fund would have only enough assets to finance the following year's benefits, and would face exhaustion shortly thereafter.

**Table 2-3. CHANGE IN 75-YEAR ACTUARIAL BALANCE FOR OASDI AND HI TRUST FUNDS
(INTERMEDIATE ASSUMPTIONS)**

(As a percent of taxable payroll)

	OASI	DI	OASDI	HI
Actuarial balance in 1995 Report	-1.87	-0.31	-2.17	-3.52
Changes in balance due to changes in:				
Valuation period	-0.07	-0.01	-0.08	-0.10
Economic and demographic assumptions	-0.06	.....	-0.07	-0.10
Disability Assumptions .....	.....	-0.03	-0.03	.....
Legislation	0.01	0.02	0.03	.....
Methods	0.14	.....	0.14	.....
Hospital Costs .....	.....	.....	.....	-0.54
Other .....	.....	.....	.....	-0.26
Total Changes	0.01	-0.03	-0.02	-1.00
Actuarial balance in 1996 Report	-1.85	-0.34	-2.19	-4.52

PART III—NATIONAL WEALTH AND WELFARE

Unlike a private corporation, the Federal Government routinely invests in ways that do not add directly to its assets. For example, Federal grants are frequently used to fund capital projects by State or local governments for highways and other purposes. Such investments are valuable to the public, which pays for them with taxes, but they are not owned by the Federal Government and would not be reported on a conventional balance sheet.

The Federal Government also invests in education and research and development (R&D). These outlays contribute to future productivity and are in that sense analogous to an investment in physical capital. Indeed, economists have computed stocks of human and knowledge capital to reflect the accumulation of such investments. Nonetheless, these capital stocks are not owned by the Federal Government, nor would they usually appear on a balance sheet.

Table 2-4 presents a national balance sheet. It includes estimates of national wealth classified in three categories: physical assets, education capital, and R&D capital. The Federal Government has made contributions to each of these categories, and these contributions are also shown in the table. Data in this table are especially uncertain, and detailed assumptions are needed to prepare the estimates. Furthermore, the principal source of data on physical capital, the Bureau of Economic Analysis, is in the process of making significant revisions to the underlying series. As a result, the estimates for 1995–1996 are quite tentative, and

the data shown for earlier years are likely to be revised as well. In broad terms, however, the picture shown in Table 2-4 is not likely to be overturned.

Federal investments are responsible for about 7½ percent of total national wealth. This is a small fraction, but it represents a large volume of investment, \$4.3 trillion. The Federal contribution is down from around 8 percent at the end of the 1980s, and from over 12 percent in 1960. Much of this reflects the shrinking size of the defense capital stocks, which have gone down from 12 percent of GDP to 10 percent in the last few years. Chart 2-7 illustrates the relative contributions of different categories of wealth to the national total.

Physical Assets

Physical assets in Table 2-4 include stocks of plant and equipment, office buildings, residential structures, land, and government's physical assets such as military hardware, office buildings, and highways. Automobiles and consumer appliances are also included in this category. The total amount of such capital is vast, amounting to around \$27 trillion in 1996; by comparison, GDP was only about \$7½ trillion.

The Federal Government's contribution to this stock of capital includes its own physical assets plus \$0.6 trillion in accumulated grants to State and local governments for capital projects. The Federal Government has financed about one-quarter of the physical capital held by other levels of government.

Table 2-4 NATIONAL WEALTH
(As of the end of the fiscal year, in trillions of 1996 dollars)

	1960	1965	1970	1975	1980	1985	1990	1994	1995	1996
ASSETS										
Publicly Owned Physical Assets:										
Structures and Equipment	2.0	2.4	2.9	3.4	3.7	3.7	3.9	4.1	4.2	4.2
Federally Owned or Financed	1.1	1.2	1.3	1.2	1.2	1.4	1.6	1.6	1.6	1.6
Federally Owned	1.0	1.0	1.0	0.9	0.8	0.9	1.0	1.0	1.0	1.0
Grants to State & Local Governments	0.1	0.2	0.3	0.4	0.5	0.5	0.6	0.6	0.6	0.6
Funded by State & Local Governments	0.9	1.2	1.6	2.2	2.5	2.3	2.3	2.5	2.6	2.6
Other Federal Assets	0.8	0.7	0.7	0.9	1.5	1.4	1.1	0.9	0.9	0.9
Subtotal	2.8	3.0	3.5	4.3	5.2	5.1	5.1	5.0	5.0	5.1
Privately Owned Physical Assets:										
Reproducible Assets	5.5	6.4	8.0	10.4	13.2	13.9	15.3	16.1	16.6	17.1
Residential Structures	2.0	2.3	2.8	3.7	4.9	5.0	5.5	6.0	6.2	6.4
Nonresidential Plant & Equipment	2.0	2.3	3.0	4.1	5.1	5.7	6.1	6.3	6.4	6.6
Inventories	0.7	0.8	0.9	1.1	1.4	1.3	1.3	1.3	1.3	1.3
Consumer Durables	0.9	1.0	1.3	1.5	1.8	1.9	2.4	2.6	2.7	2.7
Land	2.0	2.3	2.7	3.5	5.2	6.0	6.0	4.5	4.5	4.5
Subtotal	7.5	8.7	10.7	13.8	18.5	19.8	21.3	20.7	21.1	21.6
Education Capital:										
Federally Financed	0.1	0.1	0.2	0.3	0.4	0.6	0.7	0.8	0.9	0.9
Financed from Other Sources	6.2	8.1	10.8	12.5	15.3	18.4	23.4	26.3	27.3	28.2
Subtotal	6.3	8.2	11.0	12.9	15.7	19.0	24.1	27.2	28.1	29.1
Research and Development Capital:										
Federally Financed R&D	0.2	0.3	0.5	0.5	0.6	0.6	0.8	0.8	0.9	0.9
R&D Financed from Other Sources	0.1	0.2	0.3	0.4	0.4	0.6	0.8	1.0	1.0	1.1
Subtotal	0.3	0.5	0.7	0.9	1.0	1.3	1.6	1.8	1.9	1.9
Total Assets	16.8	20.4	25.9	31.8	40.4	45.2	52.1	54.7	56.2	57.7
LIABILITIES										
Net Claims of Foreigners on U.S.	(0.2)	(0.2)	(0.2)	(0.2)	(0.5)	(0.2)	0.3	0.7	0.9	1.1
Balance	17.0	20.7	26.2	32.0	40.9	45.4	51.8	53.9	55.3	56.7
Per Capita (thousands, 1996 dollars)	94.0	106.4	127.7	148.3	179.0	189.8	206.5	206.3	209.6	213.0
ADDENDA:										
Total Federally Funded Capital.	2.1	2.3	2.6	3.0	3.7	4.1	4.2	4.2	4.2	4.3
Percent of National Wealth	12.3	11.2	10.1	9.3	9.0	8.9	8.1	7.8	7.6	7.5

Education Capital

Economists have developed the concept of human capital to reflect the notion that individuals and society invest in people as well as in physical assets. Investment in education is a good example of how human capital is accumulated.

Table 2-4 shows an estimate of the stock of capital formed by the Nation's investment in education. The estimate is based on the cost of replacing the years of schooling embodied in the U.S. population aged 16 and over. The idea is to measure how much it would cost to reeducate the U.S. workforce at today's prices. The replacement value of education (as opposed to its original costs) is more meaningful economically, and is comparable to the measures of physical capital presented earlier.

Although this is a relatively crude measure, it does provide a rough order of magnitude of the current value of the investment in education. According to this measure, the stock of education capital amounted to \$29 trillion in 1996 of which about 3 percent was financed by the Federal Government. It exceeds the total value

of the Nation's stock of physical capital. The main investors in education capital have been State and local governments, parents, and students themselves who forego earning opportunities to acquire education.

There are even broader concepts of human capital. Not all useful training occurs in a schoolroom or in formal training programs at work. Much informal learning occurs within families or on the job, but measuring its value is very difficult. Labor compensation amounts to about two thirds of national income. Therefore, it is conceivable that the total value of human capital might be two to three times as large as the estimated value of physical capital. The estimates offered here are in a sense conservative, because they reflect only the costs of acquiring formal education and training.

Research and Development Capital

Research and development can also be thought of as an investment, because R&D represents a current expenditure that is made in the expectation of earning a future return. After adjusting for depreciation, the flow of R&D investment can be added up to provide

an estimate of the current R&D stock.⁶ That stock is estimated to have been about \$1.9 trillion in 1996. Although this is a large amount of research, it is a relatively small portion of total National wealth. About half of this stock was funded by the Federal Government.

Liabilities:

When considering how much the United States owes as a Nation, the debts that Americans owe to one another cancel out. They do not belong in Table 2-4; but they are important. An unwise buildup in debt, most of which was owed to other Americans, was partly responsible for the sluggishness of the recovery from the 1990-1991 recession in its early stages. The only debt that appears in Table 2-4 is the debt that Americans owe to foreign investors. America's foreign debt has been increasing rapidly in recent years, because of the continuing imbalance in the U.S. current account; but even so the size of this debt is small compared with the total stock of U.S. assets. It amounted to slightly less than 2 percent of total U.S. wealth in 1996.

Most of the Federal debt held by the public is owned by Americans, so it does not appear in Table 2-4. Only that portion of the Federal debt held by foreigners is reflected. However, comparing the Federal Government's net liabilities with total national wealth gives another indication of the relative magnitude of the imbalance in the Government's accounts. Currently, the Federal net asset imbalance, as estimated in Table 2-1, amounts to less than 6 percent of total U.S. wealth, as shown in Table 2-4.

Trends in National Wealth

The net stock of wealth in the United States at the end of 1996 was about \$57 trillion. Since 1980 it has increased in real terms at an annual rate of 2.0 percent per year—less than half the 4.5 percent rate it averaged from 1960 to 1980. Public capital formation slowed down markedly between the two periods. The real value of the net stock of publicly owned physical capital was actually lower in 1996 than in 1980—\$5.1 trillion versus \$5.2 trillion in the earlier year. Since 1980, Federal grants to State and local governments for capital projects have grown less rapidly, while capital funded directly by State and local governments has grown at an average rate of only 0.4 percent per year.

Private capital formation in physical assets has also grown more slowly since 1980. The net stock of nonresidential plant and equipment grew 1.6 percent per year from 1980 to 1996, compared with 4.9 percent in the 1960s and 1970s, and the stock of business inventories actually declined. Overall, the stock of privately owned physical capital grew at an average rate of just 1.0 percent per year between 1980 and 1996. Economists might discuss whether slower growth in net private business investment is caused by a shift toward invest-

ment in more efficient but shorter-lived computers, and whether the decline in inventories really reflects a more efficient use of them.

The accumulation of education capital, as measured here, also slowed down in the 1980s, but not nearly as much. It grew at an average rate of 4.7 percent per year in the 1960s and 1970s, about the same as the average rate of growth in private physical capital during the same period. Since 1980, education capital has grown at a 3.9 percent annual rate. This reflects the extra resources devoted to schooling in this period, and the fact that such resources were rising in relative value. R&D stocks have grown at about the same rate as education capital since 1980.

Other Federal Influences on Economic Growth

Many Federal policies have contributed to the slowdown in capital formation that occurred after 1980. Federal investment policies obviously were important, but the Federal Government also contributes to wealth in ways that cannot be easily captured in a formal presentation. Monetary and fiscal policies affect the rate and direction of capital formation. Regulatory and tax policies affect how capital is invested, as do the Federal Government's credit assistance policies.

One important channel of influence is the Federal budget deficit, which determines the size of the Federal Government's borrowing requirements. Smaller deficits in the 1980s would have resulted in a smaller gap between Federal liabilities and assets than is shown in Table 2-1. It is also likely that, had the more than \$3 trillion in added Federal debt since 1980 been avoided, a significant share of these funds would have gone into private investment. National wealth might have been 2 to 4 percent larger in 1996 had fiscal policy avoided the buildup in the debt.

Social Indicators

There are certain broad responsibilities that are unique to the Federal Government. Especially important are the Government's role in fostering healthy economic conditions, promoting health and social welfare, and protecting the environment. Table 2-5 offers a rough cut of information that can be useful in assessing how well the Federal Government has been doing in promoting these general objectives.

The indicators shown here are only a limited subset drawn from the vast array of available data on conditions in the United States. In choosing indicators for this table, priority was given to measures that were consistently available over an extended period. Such indicators make it easier to draw valid comparisons and evaluate trends. In some cases, however, this meant choosing indicators with significant limitations.

The individual measures in this table are influenced in varying degrees by many Government policies and programs, as well as by external factors beyond the Government's control. They are not outcome indicators, because they do not measure the direct results of Government activities, but they do provide a quantitative measure of the progress or lack of progress in reaching

⁶R&D depreciates in the sense that the economic value of applied research and development tends to decline with the passage of time which leads to movement in the technological frontier.

Table 2-5. ECONOMIC AND SOCIAL INDICATORS

General categories	Specific measures	1960	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996
Economic:														
Living Standards	Real GDP per person (1992 dollars)	12,512	14,792	16,521	17,896	20,252	22,345	24,559	24,058	24,447	24,738	25,352	25,630	25,998
	Average annual percent change	0.4	3.4	2.2	1.6	2.5	2.0	1.9	-2.0	1.6	1.2	2.5	1.1	1.4
	Median income (1994 dollars):													
	All households	26,598	31,001	36,410	37,202	38,930	39,283	41,223	40,214	39,727	38,980	39,881	40,611	NA
	Married couple families	27,796	32,375	38,805	40,315	42,852	44,049	46,519	45,871	45,503	45,356	46,223	47,062	NA
Economic security	Female householder, no husband present	14,047	15,738	18,793	18,559	19,272	19,346	19,742	18,677	18,493	18,397	18,753	19,691	NA
	Income share of middle three quintiles (%)	54.0	53.9	53.6	53.5	53.4	52.0	51.2	51.4	51.0	43.9	49.0	49.1	NA
	Poverty rate (%) ¹	22.2	17.3	12.6	12.3	13.0	14.0	13.5	14.2	14.8	15.1	14.5	13.8	NA
	Economic security inflation and unemployment:													
	Civilian unemployment (%)	5.5	4.5	4.9	8.5	7.1	7.2	5.5	6.7	7.4	6.8	6.1	5.6	5.4
Employment prospects	CPI-U (year over year % change)	1.7	1.6	5.7	9.1	13.5	3.6	5.4	4.2	3.0	3.0	2.6	2.8	3.0
	Increase in total payroll employment (millions)	-0.5	2.9	-0.5	0.4	0.2	2.5	0.3	-0.8	1.1	2.8	3.8	2.2	2.6
	Managerial or professional jobs (% of civilian employment)	NA	NA	NA	NA	NA	24.1	25.8	26.3	26.2	26.8	27.5	28.3	28.8
Wealth creation	Net national saving rate (% of NNP)	10.1	12.0	8.3	6.0	6.4	5.4	3.7	3.6	2.4	2.5	3.4	4.5	5.4
Innovation	Patents issued to U.S. residents (thous.)	42.0	53.6	50.1	51.4	40.8	43.3	52.8	57.7	58.7	61.1	64.2	64.5	NA
	Multifactor productivity (average annual percent change)	1.1	3.2	1.1	1.3	0.7	0.6	0.3	-1.0	1.5	0.5	0.7	NA	NA
Social:														
Families	Children living with a single parent (% of all children)	9.2	10.2	11.6	16.4	18.6	20.2	21.6	22.4	22.8	23.3	23.1	24.0	NA
Safe communities	Violent crime rate (per 100,000 population) ²	160	199	364	482	597	557	732	758	758	747	714	685	650
	Murder rate (per 100,000 population)	5	5	8	10	10	8	9	10	9	10	9	8	8
	Juvenile crime (murders per 100,000 persons age 14-17)	NA	NA	NA	NA	9	7	16	18	17	19	19	NA	NA
Health and illness	Infant mortality (per 1,000 live births)	26.0	24.7	20.0	16.1	12.6	10.6	9.2	8.9	8.5	8.4	7.9	7.6	NA
	Low birthweight (<2,500 gms) babies (%)	7.7	8.3	7.9	7.4	6.8	6.8	7.0	7.1	7.1	7.2	7.3	NA	NA
	Life expectancy at birth (years)	69.7	70.2	70.8	72.6	73.7	74.7	75.4	75.5	75.8	75.5	75.7	NA	NA
	Cigarette smokers (% population 18 and over)	NA	42.4	39.5	36.4	33.2	30.1	25.5	25.6	26.5	25.0	NA	NA	NA
	Bed disability days (average days per person)	6.0	6.2	6.1	6.6	7.0	6.1	6.2	6.5	6.3	6.7	6.2	NA	NA
Learning	High school graduates (% of population 25 and older)	44.6	49.0	55.2	62.5	68.6	73.9	77.6	78.4	79.4	80.2	80.9	81.7	NA
	College graduates (% of population 25 and older)	8.4	9.4	11.0	13.9	17.0	19.4	21.3	21.4	21.4	21.9	22.2	23.0	NA
	National assessment of educational progress ³ :													
Participation	Mathematics	NA	NA	NA	304	298	302	305	NA	307	NA	306	NA	NA
	Science	NA	NA	305	296	283	288	290	NA	296	NA	294	NA	NA
	Voting for President (% eligible population)	62.8	NA	NA	NA	52.6	NA	NA	NA	55.2	NA	NA	NA	49
Environment:	Voting for Congress (% of eligible population)	58.5	NA	43.5	NA	47.4	NA	33.1	NA	50.8	NA	36.0	NA	NA
	Individual charitable giving per capita (1996 dollars)	205	246	295	313	341	359	438	438	429	426	427	NA	NA
Environment:														
Air quality	Population living in counties with ozone levels exceeding the standard (millions)	NA	NA	NA	NA	NA	76	63	70	43	51	50	71	NA
Water quality	Population served by secondary treatment or better (millions) ...	NA	NA	NA	NA	NA	134	155	157	159	162	164	166	168

¹ The poverty rate does not reflect noncash government transfers such as Medicaid or food stamps.² Not all crimes are reported, and the fraction that go unreported may have varied over time.³ Data shown for the National Education assessment are preliminary.

some of the ultimate values that government policy is intended to promote. Such a table can serve two functions. First, it highlights areas where the Federal Government might need to modify its current practices or consider new approaches; where there are clear signs of deteriorating conditions, corrective action might be appropriate. Second, the table provides a context for evaluating other data on Government activities; for example, Government actions that weaken its own financial position may be appropriate when they promote a broader social objective.

For example, during economic recessions, reductions in tax collections lead to increased government borrowing that adds to Federal liabilities. This decline in Federal net assets, however, provides an automatic stabilizer for the private sector. State and local governments and private budgets are strengthened by allowing the Federal budget to go deeper into deficit. More stringent Federal budgetary controls could be used to hold down Federal borrowing during such periods, but

only at the risk of aggravating the downturn and weakening the other sectors.

The Government cannot avoid making such trade-offs because of its size and the broad ranging effects of its actions. Monitoring these effects and incorporating them in the Government's policy making is a major challenge.

An Interactive Analytical Framework

No single framework can encompass all of the factors that affect the financial condition of the Federal Government. Nor can any framework serve as a substitute for actual analysis. Nevertheless, the framework presented above offers one useful way to examine the financial aspects of Federal policies. Increased Federal support for investment, the reduction in Federal absorption of saving through deficit reduction, and other Administration policies to enhance economic growth are expected to promote national wealth and improve the future financial condition of the Federal Government and the Nation as a whole. As that occurs, the efforts will be clearly revealed in these tables.

TECHNICAL NOTE: SOURCES OF DATA AND METHOD OF ESTIMATING

Federally Owned Assets and Liabilities

Assets

Financial Assets: The source of data is the Federal Reserve Board's Flow-of-Funds Accounts. Two adjustments were made to this data. First, U.S. Government holdings of financial assets were consolidated with the holdings of the monetary authority, i.e., the Federal Reserve System. Second, the gold stock, which is valued in the Flow-of-Funds at a constant historical price, is revalued using the market value for gold.

Physical Assets

Fixed Reproducible Capital: Estimates were developed from the OMB historical data base for physical capital outlays. The data base extends back to 1940 and was supplemented by data from other selected sources for 1915–1939. The source data are in current dollars. To estimate investment flows in constant dollars, it is necessary to deflate the nominal investment series. This was done using price deflators for Federal purchases of durables and structures from the National Income and Product Accounts. These price deflators are available going back as far as 1930. For earlier years, deflators were based on historical statistics for constant price public capital formation. The capital stock series were adjusted for depreciation on a straight-line basis, assuming useful lives of 46 years for water and power projects; 40 years for other direct Federal construction; and 16 years for major nondefense equipment and for defense procurement.

Fixed Nonreproducible Capital: Historical estimates for 1960–1985 were based on estimates in Michael J. Boskin, Marc S. Robinson, and Alan M. Huber, "Government Saving, Capital Formation and Wealth in the United States, 1947–1985," published in *The Measurement of Saving, Investment, and Wealth*, edited by Robert E. Lipsey and Helen Stone Tice (The University of Chicago Press, 1989).

Estimates were updated using changes in the value of private land from the Flow-of-Funds Balance Sheets and in the Producer Price Index for Crude Energy Materials. The Bureau of Economic Analysis is in the process of preparing satellite accounts to accompany the National Income and Product Accounts that will report on changes in mineral deposits for the Nation as a whole, but this work is not yet completed.

Liabilities

Financial Liabilities: The principal source of data is the Federal Reserve's Flow-of-Funds Accounts.

Contingent Liabilities: Sources of data are the OMB Deposit Insurance Model and the OMB Pension Guarantee Model. Historical data on contingent liabilities for deposit insurance were also drawn from the Congressional Budget Office's study, *The Economic Effects of the Savings and Loan Crisis*, issued January 1992.

Pension Liabilities: For 1979–1995, the estimates are the actuarial accrued liabilities as reported in the an-

nual reports for the Civil Service Retirement System, the Federal Employees Retirement System, and the Military Retirement System (adjusted for inflation). Estimates for the years before 1979 are not actuarial; they are extrapolations. The estimate for 1996 is a projection.

Long-Run Budget Projections

The long-run budget projections are based on long-run demographic and economic projections. A spreadsheet model of the Federal budget developed at OMB computes the budgetary implications of this forecast.

Demographic and Economic Projections: For the years 1997–2007, the assumptions are identical to those used in the budget. As always, these budget assumptions reflect the President's policy proposals, in this case that the budget be balanced. The long-run projections extend these budget assumptions by holding constant inflation, interest rates, and unemployment at the levels assumed in the final year of the budget. Population growth and labor force participation are extended using the intermediate assumptions from the 1996 social security Trustees' report. The projected rate of growth for real GDP is built up from the labor force assumptions and an assumed rate of productivity growth. The assumed rate of productivity growth is held constant at the average rate of growth implied by the budget's economic assumptions. The economic assumptions used for the current services projections subtract the "fiscal dividend" from interest rates, profits, and dividends.

Budget Projections: For the budget period, the projections follow the budget. Beyond the budget horizon, receipts are projected using simple rules of thumb linking income taxes, payroll taxes, excise taxes, and other receipts to projected tax bases derived from the economic forecast. Outlays are computed in different ways. Discretionary spending grows at the rate of inflation. Social security, Medicare, and Federal pensions are projected using the most recent actuarial forecasts available at the time the budget was prepared (June 1996 for social security). These projections are repriced using Administration inflation and wage growth assumptions. Other entitlement programs are projected based on rules of thumb linking program spending to elements of the economic and demographic forecast such as the poverty rate.

National Balance Sheet Data

Publicly Owned Physical Assets: Basic sources of data for the federally owned or financed stocks of capital are the investment flows described in Chapter 6 of this volume. Federal grants for State and local government capital were added together with adjustments for inflation and depreciation in the same way as described above for direct Federal investment. Data for total State and local government capital come from the unrevised capital stock data prepared by the Bureau of Economic Analysis.

Privately Owned Physical Assets: Data are from the Flow-of-Funds national balance sheet. Estimates for 1995–1996 were based on investment data from the National Income and Product Accounts.

Education Capital: The stock of education capital is computed by valuing the cost of replacing the total years of education embodied in the U.S. population 16 years of age and older at the current cost of providing schooling. The estimated cost includes both direct expenditures in the private and public sectors and an estimate of students' foregone earnings, i.e., it reflects the opportunity cost of education.

For this presentation, Federal investment in education capital is a portion of the Federal outlays included in the conduct of education and training. This portion includes direct Federal outlays and grants for elementary, secondary, and vocational education and for higher education. The data exclude Federal outlays for physical capital at educational institutions and for research and development conducted at colleges and universities because these outlays are classified elsewhere as investment in physical capital and investment in R&D capital. The data also exclude outlays under the GI Bill; outlays for graduate and post-graduate education spending in HHS, Defense and Agriculture; and most outlays for vocational training.

Data on investment in education financed from other sources come from educational institution reports on the sources of their funds, published in U.S. Department of Education, *Digest of Education Statistics*. Nominal expenditures were deflated by the implicit price deflator for GDP to convert them to constant dollar values. Education capital is assumed not to depreciate, but to be retired when a person dies. An education capital stock computed using this method with different source data can be found in Walter McMahon, "Relative Returns To Human and Physical Capital in the U.S. and Efficient Investment Strategies," *Economics of Education Review*, Vol. 10, No. 4, 1991. The method is described in detail in Walter McMahon, *Investment in Higher Education*, 1974.

Research and Development Capital: The stock of R&D capital financed by the Federal Government was developed from a data base that measures the conduct of

R&D. The data exclude Federal outlays for physical capital used in R&D because such outlays are classified elsewhere as investment in federally financed physical capital. Nominal outlays were deflated using the GDP deflator to convert them to constant dollar values.

Federally funded capital stock estimates were prepared using the perpetual inventory method in which annual investment flows are cumulated to arrive at a capital stock. This stock was adjusted for depreciation by assuming an annual rate of depreciation of 10 percent on the outstanding balance for applied research and development. Basic research is assumed not to depreciate. Chapter 6 of this volume contains additional details on the estimates of the total federally financed R&D stock, as well as its national defense and non-defense components.

A similar method was used to estimate the stock of R&D capital financed from sources other than the Federal Government. The component financed by universities, colleges, and other nonprofit organizations is based on data from the National Science Foundation, *Surveys of Science Resources*. The industry-financed R&D stock component is from that source and from the U.S. Department of Labor, *The Impact of Research and Development on Productivity Growth*, Bulletin 2331, September 1989.

Experimental estimates of R&D capital stocks have recently been prepared by BEA. The results are described in "a Satellite Account for Research and Development," *Survey of Current Business*, November 1994. These BEA estimates are lower than those presented here primarily because BEA assumes that the stock of basic research depreciates, while the estimates in Table 2–3 assume that basic research does not depreciate. BEA also assumes a slightly higher rate of depreciation for applied research and development, 11 percent, compared with the 10 percent rate used here.

Social Indicators

The main sources for the data in this table are the Government statistical agencies. Generally, the data are publicly available in the President's annual *Economic Report* and the *Statistical Abstract of the United States*.